SEQUENCE LISTING



M10> ITOH, Kyogo SHICHIJO, Shigeki IMAI, Yasuhisa

<120> TUMOR ANTIGEN PROTEINS, GENES THEREFOR, AND TUMOR ANTIGEN PEPTIDES

<130> 0020-4491P

<140> 09/202,047

<141> 1998-12-07

<160> 2

<170> PatentIn Ver. 2.1

<210> 1

<211> 2527

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1)..(2527)

<223> Strandedness: Double-stranded

<220>

<221> 5'UTR

<222> (1)..(38)

<220>

<221> CDS

<222> (39)..(2438)

<220>

<221> 3'UTR

<222> (2439)..(2506)

<220>

<221> polyA site

<222> (2507)..(2527)

<400> 1

ggttcggcgg cagccgggct cggagtggac gtgccact atg ggg tcg tcc aag aag 56 Met Gly Ser Ser Lys Lys

5

25 30 35

aag cac cgg agt ggc ggc agt ggc ggt agc ggt ggc gaa cga cgg aag 200

Lys His Arg Ser Gly Gly Ser Gly Gly Glu Arg Arg Lys

40 45 50 cgg agc cgg gaa cgt ggg ggc gag cgc ggg agc ggg cgc ggg gcc 24

Arg Ser Arg Glu Arg Gly Glu Arg Gly Ser Gly Arg Arg Gly Ala

55

60

65

70

296 'qaa qot gag goo ogg ago ago acg cac ggg ogg gag ogo ago cag goa Glu Ala Glu Ala Arg Ser Ser Thr His Gly Arg Glu Arg Ser Gln Ala 80 75 gag eec tee gag egg ege gtg aag egg gag aag ege gat gae gge tae 344 Glu Pro Ser Glu Arg Arg Val Lys Arg Glu Lys Arg Asp Asp Gly Tyr 392 gag gec get gec age tec aaa aet age tea gge gat gee tee tea ete Glu Ala Ala Ala Ser Ser Lys Thr Ser Ser Gly Asp Ala Ser Ser Leu 110 115 440 age ate gag gag act aac aaa ete egg gea aag ttg ggg etg aaa eee Ser Ile Glu Glu Thr Asn Lys Leu Arg Ala Lys Leu Gly Leu Lys Pro 125 488 ttg gag gtt aat gcc atc aag aag gag gcg ggc acc aag gag gag ccc Leu Glu Val Asn Ala Ile Lys Lys Glu Ala Gly Thr Lys Glu Glu Pro 140 145 536 gtg aca gct gat gtc atc aac cct atg gcc ttg cga cag cga gag gag Val Thr Ala Asp Val Ile Asn Pro Met Ala Leu Arg Gln Arg Glu Glu 155 160 ctg cgg gag aag ctg gcg gct gcc aag gag aag cgc ctg ctg aac caa 584 Leu Arg Glu Lys Leu Ala Ala Ala Lys Glu Lys Arg Leu Leu Asn Gln 170 175 632 aag ctg ggg aag ata aag acc cta gga gat gac ccc tgg ctg gac Lys Leu Gly Lys Ile Lys Thr Leu Gly Glu Asp Asp Pro Trp Leu Asp 190 gac act gca gcc tgg atc gag agg agc cgg cag ctg cag aag gag aag 680 Asp Thr Ala Ala Trp Ile Glu Arg Ser Arg Gln Leu Gln Lys Glu Lys 205 210 728 gac ctg gca gag aag agg gcc aag tta ctg gag gag atg gac caa gag Asp Leu Ala Glu Lys Arg Ala Lys Leu Leu Glu Glu Met Asp Gln Glu 225 220 776 ttt ggt gtc agc act ctg gtg gag gag gag ttc ggg cag agg cgg cag Phe Gly Val Ser Thr Leu Val Glu Glu Glu Phe Gly Gln Arg Arg Gln 235 240 gac ctg tac agt gcc cgg gac ctg cag ggc ctc acc gtg gag cat gcc 824 Asp Leu Tyr Ser Ala Arq Asp Leu Gln Gly Leu Thr Val Glu His Ala 250 872 att gat tee tte ega gaa ggg gag aca atg att ett ace ete aag gae Ile Asp Ser Phe Arg Glu Gly Glu Thr Met Ile Leu Thr Leu Lys Asp 270 275 aaa ggc gtg ctg cag gag gag gac gtg ctg gtg aac gtg aac ctg 920 Lys Gly Val Leu Gln Glu Glu Glu Asp Val Leu Val Asn Val Asn Leu 285 290 gtg gat aag gag cgg gca gag aaa aat gtg gag ctg cgg aag aag aag 968 Val Asp Lys Glu Arg Ala Glu Lys Asn Val Glu Leu Arg Lys Lys 300 305 cct gac tac ctg ccc tat gcc gag gac gag agc gtg gac gac ctg gcg 1016 Pro Asp Tyr Leu Pro Tyr Ala Glu Asp Glu Ser Val Asp Asp Leu Ala 320 315 cag caa aaa cct cgc tct atc ctg tcc aag tat gac gaa gag ctt gaa 1064 Gln Gln Lys Pro Arg Ser Ile Leu Ser Lys Tyr Asp Glu Glu Leu Glu 330 335 1112 ggg gag egg eca cat tee tte ege ttg gag eag gge gge aeg get gat Gly Glu Arg Pro His Ser Phe Arg Leu Glu Gln Gly Gly Thr Ala Asp 350 ggc ctg cgg gag cgg gag ctg gag gag atc cgg gcc aag ctg cgg ctg 1160 Gly Leu Arg Glu Arg Glu Leu Glu Glu Ile Arg Ala Lys Leu Arg Leu 365 370 1208 cag gct cag tcc ctg agc aca gtg ggg ccc cgg ctg gcc tcc gaa tac Gln Ala Gln Ser Leu Ser Thr Val Gly Pro Arg Leu Ala Ser Glu Tyr 375 385

El conf

4. 1. 6

						gtg Val								1256
				aag		gag Glu			gta				gat	1304
			ctc			cag Gln		cag				ggt		1352
		gga				cgc Arg 445	cga				gag			1400
	cct					ctg Leu				acc				1448
atg					gag	gag Glu								1496
						gac Asp								1544
			gga			ctg Leu		cag				cag		1592
		agt				gtg Val 525	gtg				aag			1640
	cag					gag Glu				gag				1688
atc					acg	tcc Ser								1736
						ggc Gly								1784
						gag Glu								1832
		gag				ggc Gly 605	tgg				ctg			1880
_	cag	_	-	-		tct Ser	_							1928
gaa					agg	ggg Gly								1976
				ctg		acc Thr								2024
						ccc Pro								2072
		atc				tac Tyr 685	agc							2120
	cag					aag Lys								2168

'gaa tac gtg gat gag acg ggc cgg aaa ctc aca ccc aag gag gct ttc 2216 Glu Tyr Val Asp Glu Thr Gly Arg Lys Leu Thr Pro Lys Glu Ala Phe 715 720 cgg cag ctg tcq cac cgc ttc cat ggc aag ggc tca ggc aag atg aag 2264 Arg Gln Leu Ser His Arg Phe His Gly Lys Gly Ser Gly Lys Met Lys 735 2312 aca gag cgg cgg atg aag aag ctg gac gag gag gcg ctc ctg aag aag Thr Glu Arg Arg Met Lys Lys Leu Asp Glu Glu Ala Leu Leu Lys Lys 745 750 atg age tee age gae acg eec etg gge ace gtg gee etg etc eag gag 2360 Met Ser Ser Ser Asp Thr Pro Leu Gly Thr Val Ala Leu Leu Gln Glu 765 aag cag aag gct cag aag acc ccc tac atc gtg ctc agc ggc agc ggc 2408 Lys Gln Lys Ala Gln Lys Thr Pro Tyr Ile Val Leu Ser Gly Ser Gly 785 780 aag agc atg aac gcg aac acc atc acc aag tgacagcgcc ctcccgtagt 2458 Lys Ser Met Asn Ala Asn Thr Ile Thr Lys 795 aaaaaaaa <210> 2 <211> 800 <212> PRT <213> Homo sapiens Met Gly Ser Ser Lys Lys His Arg Gly Glu Lys Glu Ala Ala Gly Thr Thr Ala Ala Ala Gly Thr Gly Gly Ala Thr Glu Gln Pro Pro Arg His 25 Arg Glu His Lys Lys His Lys His Arg Ser Gly Gly Ser Gly Gly Ser Gly Gly Glu Arg Arg Lys Arg Ser Arg Glu Arg Gly Gly Glu Arg Gly Ser Gly Arg Arg Gly Ala Glu Ala Glu Ala Arg Ser Ser Thr His Gly 70 75 Arg Glu Arg Ser Gln Ala Glu Pro Ser Glu Arg Arg Val Lys Arg Glu Lys Arg Asp Asp Gly Tyr Glu Ala Ala Ser Ser Lys Thr Ser Ser 100 105 110 Gly Asp Ala Ser Ser Leu Ser Ile Glu Glu Thr Asn Lys Leu Arg Ala 115 120 125 Lys Leu Gly Leu Lys Pro Leu Glu Val Asn Ala Ile Lys Lys Glu Ala 135 140 Gly Thr Lys Glu Glu Pro Val Thr Ala Asp Val Ile Asn Pro Met Ala 150 155 Leu Arg Gln Arg Glu Glu Leu Arg Glu Lys Leu Ala Ala Lys Glu 170 Lys Arg Leu Leu Asn Gln Lys Leu Gly Lys Ile Lys Thr Leu Gly Glu 180 185 190 Asp Asp Pro Trp Leu Asp Asp Thr Ala Ala Trp Ile Glu Arg Ser Arg 200 Gln Leu Gln Lys Glu Lys Asp Leu Ala Glu Lys Arg Ala Lys Leu Leu 215 220 Glu Glu Met Asp Gln Glu Phe Gly Val Ser Thr Leu Val Glu Glu

250

Phe Gly Gln Arg Arg Gln Asp Leu Tyr Ser Ala Arg Asp Leu Gln Gly

235

230

'Leu Thr Val Glu His Ala Ile Asp Ser Phe Arg Glu Gly Glu Thr Met 260 265 Ile Leu Thr Leu Lys Asp Lys Gly Val Leu Gln Glu Glu Glu Asp Val 275 280 Leu Val Asn Val Asn Leu Val Asp Lys Glu Arg Ala Glu Lys Asn Val 295 300 Glu Leu Arg Lys Lys Pro Asp Tyr Leu Pro Tyr Ala Glu Asp Glu 310 315 Ser Val Asp Asp Leu Ala Gln Gln Lys Pro Arg Ser Ile Leu Ser Lys 325 330 Tyr Asp Glu Glu Leu Glu Gly Glu Arg Pro His Ser Phe Arg Leu Glu 345 Gln Gly Gly Thr Ala Asp Gly Leu Arg Glu Arg Glu Leu Glu Glu Ile 360 Arg Ala Lys Leu Arg Leu Gln Ala Gln Ser Leu Ser Thr Val Gly Pro 375 Arg Leu Ala Ser Glu Tyr Leu Thr Pro Glu Glu Met Val Thr Phe Lys 390 395 Lys Thr Lys Arg Arg Val Lys Lys Ile Arg Lys Lys Glu Lys Glu Val 405 410 Val Val Arg Ala Asp Asp Leu Leu Pro Leu Gly Asp Gln Thr Gln Asp 425 Gly Asp Phe Gly Ser Arg Leu Arg Gly Arg Gly Arg Arg Arg Val Ser 440 Glu Val Glu Glu Lys Glu Pro Val Pro Gln Pro Leu Pro Ser Asp 455 Asp Thr Arg Val Glu Asn Met Asp Ile Ser Asp Glu Glu Glu Gly Gly 470 475 Ala Pro Pro Pro Gly Ser Pro Gln Val Leu Glu Glu Asp Glu Ala Glu 485 490 Leu Glu Leu Gln Lys Gln Leu Glu Lys Gly Arg Arg Leu Arg Gln Leu 505 Gln Gln Leu Gln Gln Leu Arq Asp Ser Gly Glu Lys Val Val Glu Ile 520 Val Lys Lys Leu Glu Ser Arg Gln Arg Gly Trp Glu Glu Asp Glu Asp 535 Pro Glu Arg Lys Gly Ala Ile Val Phe Asn Ala Thr Ser Glu Phe Cys 550 555 Arg Thr Leu Gly Glu Ile Pro Thr Tyr Gly Leu Ala Gly Asn Arg Glu 570 Glu Gln Glu Glu Leu Met Asp Phe Glu Arg Asp Glu Glu Arg Ser Ala 585 580 Asn Gly Gly Ser Glu Ser Asp Gly Glu Glu Asn Ile Gly Trp Ser Thr 600 Val Asn Leu Asp Glu Glu Lys Gln Gln Gln Asp Phe Ser Ala Ser Ser 615 620 Thr Thr Ile Leu Asp Glu Glu Pro Ile Val Asn Arg Gly Leu Ala Ala 630 635 Ala Leu Leu Cys Gln Asn Lys Gly Leu Leu Glu Thr Thr Val Gln 650 Lys Val Ala Arg Val Lys Ala Pro Asn Lys Ser Leu Pro Ser Ala Val 665 Tyr Cys Ile Glu Asp Lys Met Ala Ile Asp Asp Lys Tyr Ser Arg Arg 680 Glu Glu Tyr Arg Gly Phe Thr Gln Asp Phe Lys Glu Lys Asp Gly Tyr 695 Lys Pro Asp Val Lys Ile Glu Tyr Val Asp Glu Thr Gly Arg Lys Leu 710 715 Thr Pro Lys Glu Ala Phe Arg Gln Leu Ser His Arg Phe His Gly Lys

and the second

5